



THE FUNCTIONING OF GOVERNMENT BONDS THE EXAMPLE OF GREECE AND VIETNAM

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The article begins with a description of the basic functionality of government bonds. The most important attributes of bonds and their appraisal are described by means of present value. A number of simplifications will be carried out (e.g. assumptions of final date yields and a flat yield curve). In practice, however, flat yield curves are not typical. Although taking normal yield curves into consideration would not pose a problem in terms of method, it would be unnecessary for a demonstration of the central problems and would also extend and complicate it unnecessarily. This is very similar in the case of assumptions of final date yields.

By means of an assessment of bonds on international capital markets the second part of the article deals with the consequences and outcomes for the Greek government. This is followed by a short description of the EU bailout measures. After this, a thesis as to the winners and losers of the Greek crisis follows. Finally, from the crisis in Greece, a number of recommendations for action can be derived for Vietnam.

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1. Basic principles of government bonds

The basic principle of government bonds can be illustrated in Figure 1 as follows:

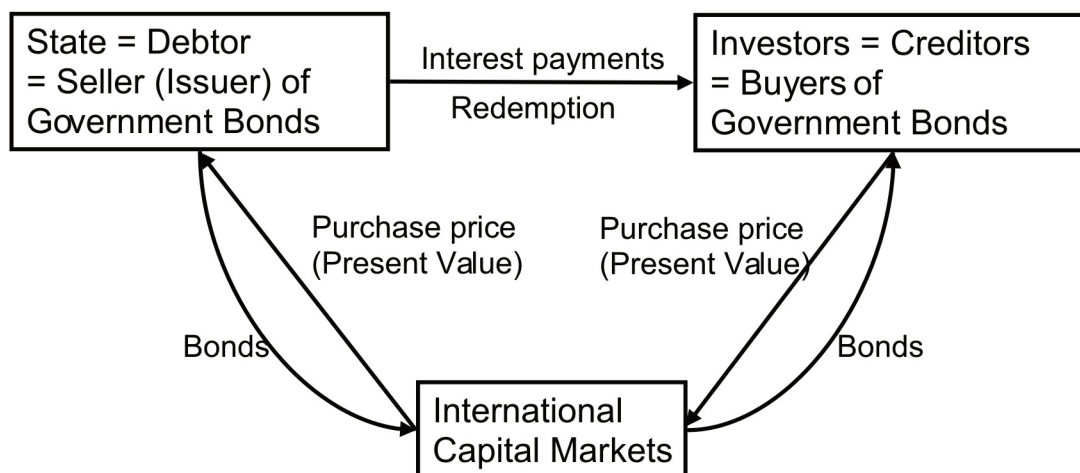


Figure 1: Basic principles of government bonds

Legally this deals with the debt relationship between the government and the buyers (investors) of bonds. The state borrows money and is the debtor. Investors are creditors. The state issues bonds to cover its financial requirements and offers them to potential creditors on the international credit markets. However, due to their creditworthiness and reputation, numerous countries are only able to issue bonds on their domestic markets.

The purchase price or the present value plays a major role. This is the price the investor is willing to pay on the capital market. At the same time the present value reflects the amount that flows to a government from the issue. Investors provide a government with capital, for which the state is then liable for interest payments for the full term of the loan and in the end for bond redemption. The state guarantees the interest payments and redemption with its creditworthiness, which basically reflects its country ranking.

Big commercial banks that are active internationally usually buy the largest volume of government bonds. They are therefore the most important creditors of these countries. This fact will have special significance later on in this paper. But insurance companies, other institu-

tional investors, public institutions and individual investors can also purchase government bonds and assume the role of the creditor.

2. Features of government bonds

To begin with, a description of the most important features of bonds is essential. These features will be illustrated by examples of concrete figures, including the above-mentioned simplifications.

The nominal value represents the total nominal value of the issue. The nominal value is split. Each and every unit is referred to as the par value. As an example: a bond has a nominal value of €1 billion and a unit of €1,000 par value. This means that one million units will be issued in total. Current return and repayment always correspond with the nominal value or the par value.

The maturity of a bond is the time for which interest is paid and at which end redemption is carried out. The maturity is assigned the variable "M"; a maturity of M=10 years is assumed.

Current return, also called coupon interest, is illustrated by the variable "c". The coupon interest always applies for a year and is $c = 4\%$ p.a. in our example. Normally, with coupon interest, payments depend on the number of interest payments in a year. To simplify our example, we have chosen one annual interest payment. In practice half and quarter-year payments are also typical.

There are various forms for the redemption (variable "rd") of a bond, e.g. by means of a draw-

ing according to a repayment plan, at the end of the term, etc. In our example repayment is set for the term's end, i.e. the nominal value of €1 billion will be repaid in full to the creditors at the end of the term of $M=10$ years.

Finally, the government has to supply collateral for the repayment of interest. This is most often secured by the creditworthiness of the state. This creditworthiness is normally determined by rating agencies. In addition the state can offer other securities such as property. In this case, one speaks of mortgage bonds.

3. Evaluation of government bonds

Based on these features, an evaluation of the bonds can now be undertaken with the aid of present value. Assuming a flat interest curve (for the calculation with an interest curve that is not flat see Fabozzi, 2004), the calculation for present value (PV) is:

$$PV = \sum_{m=1}^M c \cdot (1+i)^{-m} + rd \cdot (1+i)^{-M}$$

Here the coupon interest c is amounted in the euro and not in percentage. For €1,000 par value (=redemption) the coupon interest is $c = €40$.

The variable “ i ” is the valuation interest. There are various methods to determine the valuation (see Fabozzi, 2004). It should be assumed that German government bonds can serve as a benchmark for this. Today, German government bonds are seen as risk free (AAA rating). The effective annual yield is between 2.5% and 3%. In the following we assume a simplified interest payment of $i=3\%$ p.a. for all contract periods (i.e. a flat interest curve, see above).

The present value can now be calculated for the bond (i.e. for €1,000 par value and €1,000 redemption after 10 years):

1st year: $€40 / 1.03^1$ + 2nd year: $€40 / 1.03^2$ + 3rd year: $€40 / 1.03^3$ + ... + 10th year: $€1,040 / 1.03^{10} = €1,085.30$

If applied to the par value of €1000, present value amounts to a percentage of 108.53%. The present value can be interpreted as follows:

Instead of €1,000 par value, an investor would be willing to pay a present value of €1,085.30 for a bond with a coupon of 4% p.a. For the purchase of a German government bond he would only receive 3% p.a. The higher 1% annual interest payment is valued

today at €85.30. The investor is only willing to pay this higher present value if he estimates the bond with a 4% coupon interest to be risk free.

But if the investors in capital markets anticipate the risk, that is, for example the Greek government will not be able to pay back its future interest and redemption liabilities, they will calculate a risk premium. Depending on how high they estimate this risk to be, they may only be willing to pay 80% for Greek government bonds.

If a course of 80% should develop on international capital markets due to these expectations of market participants, the buyers will achieve an effective annual yield of 6.82% p.a. In this case the gap to German government bonds is 382 basis points. The following calculation makes this clear:

1st year: $€40 / 1.0682^1$ + 2nd year: $€40 / 1.0682^2$ + 3rd year: $€40 / 1.0682^3$ + ... + 10th year: $€1,040 / 1.0682^{10} = €800 = 80\%$

Should Greece become insolvent and if it came to a debt moratorium with investors, the investors could achieve a redemption quota of 61.69% (instead of a redemption of 100%). In this case, the investors achieve an effective annual yield of 3% p. a. (=yield of German government bonds):

1st year: $€40 / 1.03^1$ + 2nd year: $€40 / 1.03^2$ + 3rd year: $€40 / 1.03^3$ + ... + 10th year: $€656.88 / 1.03^{10} = €800 = 80\%$

4. Consequences for Greece

So, if Greece were to require new money, e.g. €1 billion (for whatever reasons or intentions) the following would happen: At the current course on international capital markets, Greece would have to issue a nominal volume of €1.25 billion. This would mean that 4% interest of €1.25 billion, or €50 million, would be due every year; and after 10 years, €1.25 billion would have to be repaid (compared with Germany: only €30 million in interest and €1 billion redemption). The vicious circle begins: higher interest and redemption payments lead to higher state debt, and this, in turn, leads to higher risk premiums that investors would have to cash on the international capital markets.

Greece's biggest creditors are French (€50 billion) and German banks (€30 billion). So every year,

French and German banks cash in risk premiums of about €1.5 billion or €0.9 billion from the Greek government.

In order to handle the imminent Greek insolvency, there were basically two possibilities (see also Dullien/ Schwarzer, 2010):

1. A debt moratorium (as described above)
2. A rescue package of EU countries or the ECB

(1) There are estimates that assume that in a debt moratorium a redemption quota of 70% would have been sufficient to re-establish Greece's solvency. (In any case the yields of investors would have been higher than that of German government bonds, see above). This would have led to amortization of French and German banks, which would have reduced their profits respectively - a consequence that could have been tolerated. A strict savings plan of the Greek government would not have prevented this, but rather facilitated it: in order to re-establish its credibility or its capital market viability, Greece would have virtually been forced to adhere to a strict austerity policy by the capital markets (Argentina is a good example of this).

(2) As is well-known in the meantime, in the case of Greece, a rescue package was bundled for political reasons. For the year 2010, Greece needs help from other EU countries to the extent of €30 billion. This aid should be granted (or has already been granted) in the form of loans under normal market conditions (i.e. without risk premiums). It is anticipated that the IMF will provide additional credit amounting to €15 billion. In total, Greece will require or expect a credit volume of €80 billion. This second version exhibits a few grave weaknesses.

On the one hand, for taxpayers European households will be put under massive pressure. Tax money is not available for sensible purposes (investments in education, infrastructure, redemption, etc.), or it has to be saved.

The pressure on Greece to see through a strict austerity policy can only be induced politically (in contrast to Argentina). This means that the success of a Greek public restructuring depends essentially on future political development. Future political developments depend on many incalculable factors and consequently the success of the restructuring of state

finances.

Even if aid were granted in the form of loans, the redemption of loans would depend on the successful restructuring of Greece. If the restructuring is not successful in the long term, a debt moratorium would be more and more inevitable. If a debt moratorium were to become unavoidable, some of the European taxpayers' money (in proportion to the redemption quota, see above) would be lost forever.

5. Winners and losers of the crisis in Greece

Figure 2 shows the actors in the crisis and their relationships to each other.

It is quite easy to see who the winners and losers of the crisis are.

The winners are the investors or big banks, in other words, Greece's creditors. They also pocket a high risk premium (current quotation at 80%) for a risk which currently no longer exists. Even if a debt moratorium were declared in the future, they would most probably only lose a fraction of this collected risk premium! The most significant part of the risk premium will be paid by European taxpayers.

The losers are therefore the big European countries or their taxpayers (Germany, France, Holland), which have contributed the largest part to the rescue package. Taxpayers are covering the bill without the banks really being made accountable. This is a phenomenon which has become well-known as a consequence of the worldwide financial crisis. To date, there seems to be no sustainable collective political intent to change this.

6. Guidance for Vietnam

What guidance can be offered to Vietnam in light of these events? The first recommendation that can be deduced from the Greek crisis is:

- (1) No issues of Vietnamese government bonds to international capital markets

The problems for Greece rest mainly on two pillars: to begin with insufficient domestic fiscal discipline with respect to revenues (insufficient and inconsistent tax collection, corruption, etc.) and expenditures (premature pension policy for civil servants, etc.). Secondly, the self-indulgent financial crises on the international capital mar-

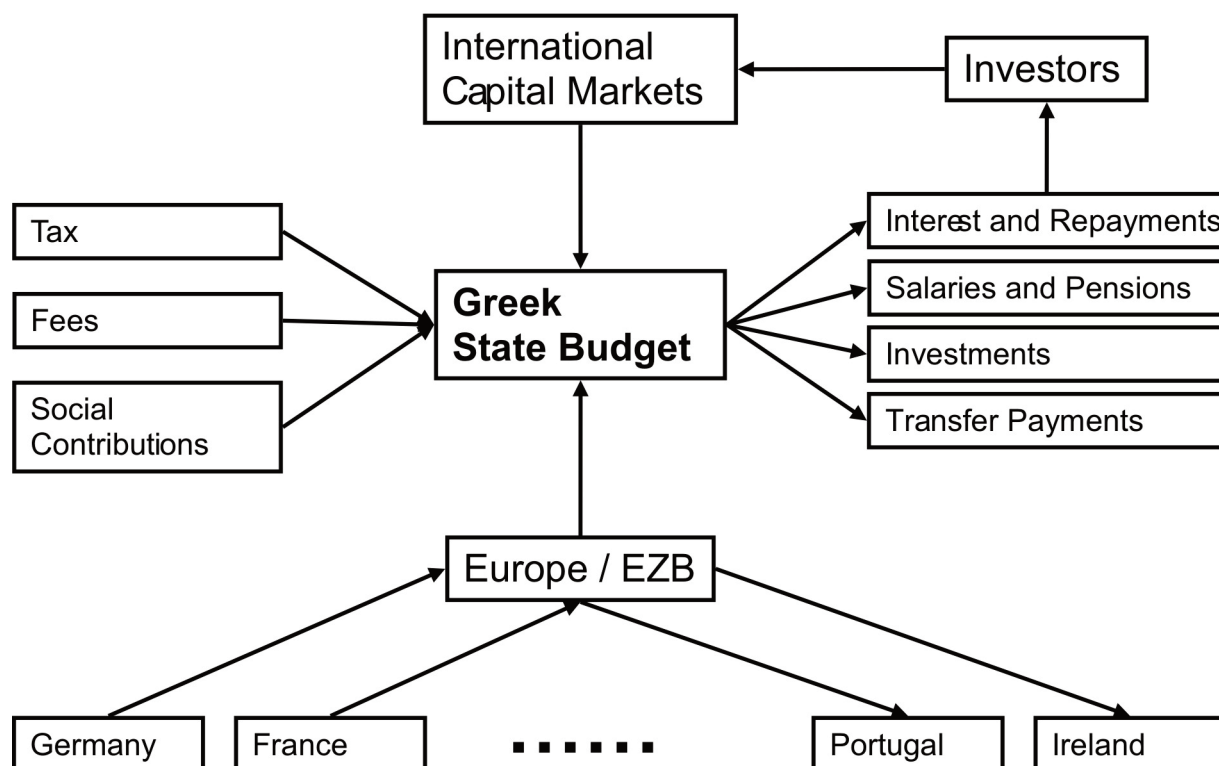


Figure 2: Winners and losers of the crisis in Greece

kets (for details see Dullien/ Schwarzer, 2010).

Vietnam can avoid the problems of these self-indulgent financial crises by not exposing themselves to the (speculative) expectations of the players on the international capital markets! In addition, such issues would probably only be possible in the US dollar, which would lead to an additional currency risk. This currency risk would most likely increase the investment costs of the Vietnamese government (for details on this problem see Wolke, 2008).

(2) An attractive arrangement for Vietnamese government bonds

If the issue of Vietnamese government bonds on the domestic capital market were unsuccessful, the Vietnamese state bank could purchase the bonds themselves. This would ultimately entail nothing less than printing new money with possibly many negative consequences such as, among other things, nominal devaluation of the domestic currency, inflationary tendencies, etc. (for details see Herr/Heine, 2003). The author of this article would strongly discourage taking this course of ac-

tion.

A successful issue of Vietnamese government bonds on the Vietnamese capital market presupposes that potential domestic investors would find them attractive enough to purchase as an investment. At the moment Vietnam investors prefer investing in gold. This is why Vietnamese government bonds have to be attractive enough to be able to compete with gold. This can be achieved if the bonds are issued with the following features:

- a. A high coupon interest with quarterly interest payments,
- b. An end of term repayment policy in order to process the transaction with the investors in the most transparent fashion,
- c. The possibility of terminating the buyer's contract at any time (repurchase of the bonds by the Vietnamese government) at present value,
- d. Issue of tranches with different terms of contract (3, 7, 10, 20 years), in order to satisfy various requirements with respect to investors' individual planning,
- e. Collateral: one possibility would be to issue

debentures (see 2. above), which might however cause some legal problems in the execution. It would be more important to install a more transparent information policy for investors with respect to the creditworthiness and willingness of the Vietnamese government to repay bond issues.

In addition, there should be a ban on transfers for all bonds. There is no apparent reason for why buyers of bonds should be able to transfer them to third parties. One of the many causes of the worldwide financial crisis was the transfer of so many asset backed securities. In the case of liquidity problems the investor can always sell the bonds back to the state at a fair price (present value). There are also a number of terms of contract at his/her disposal (see above c) and d)).

(3) Sufficient Information for Vietnamese investors

A new issue can only be successful if potential Vietnamese investors are sufficiently informed about the advantages of government bonds (see II above). On the other hand, this is of no real use if investors are already convinced by other types of investment. This refers to investing in gold! Therefore, information about investments in gold should be comprehensive since gold has three significant disadvantages:

a. Gold can only be bought and sold at global market prices. In times of crisis there is a high demand for gold and the price goes up. But there will certainly be times in the future when the economy will have recovered. In such phases the price of gold will go down, especially in comparison to peak times. With government bonds investors have no market price risk; instead (as long as they sell back the bond before maturity) this may involve some interest rate risk (for details see Wolke, 2008).

It is also questionable whether gold will play a role in the long-term and could therefore lose a lot of its value. The high price of gold is achieved by means of low global supply. In addition, high demand is reached in periods of crisis. When economies are recovering, in contrast to crude oil, gold is not needed as a natural resource (not for dentures and not for any other manufacturing

needs). On the demand side, in this case, gold is only a decorative currency and venture. Although gold jewellery will certainly continue to attract the interest of some people, there is some doubt that this would suffice for long-term stability of the price of gold.

b. Gold does not deliver regular dividend payouts! Yields may be realised but in this case the gold asset would no longer be available as a crisis currency. Government bond interest is paid out every quarter, is at the disposal of investors, and can be re-invested (e.g. in the case of higher interest rates). Nevertheless, they remain creditors of the Vietnamese government until the bonds mature.

c. There are substantial costs involved in warehousing gold. One example for this includes the many shops that sell safes. To avoid such warehousing costs, gold certificates from banks could be a viable alternative which would be linked to the global market price, although with certificates the investor carries a certain degree of contingency risk of the issuing bank. With government bonds, there are no warehousing or security costs!

Amongst the Vietnamese people, one can observe a degree of pride in their country (to varying degrees). This helps to explain why the Vietnamese have won every war in the history of the country. The purchase of government bonds would certainly increase the commitment of the Vietnamese to their country far more than the purchase of gold. Together with the above described recommendations, there should not be anything to stand in the way of a successful new issue of Vietnamese government bonds■

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